UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00978

November 20, 2003

Ms. Karyn Wood
Forest Supervisor, Wallowa Whitman National Forest
1550 Dewey Avenue
P.O. Box 97814
Baker City, OR 97814

Re: Endangered Species Act Formal Section 7 Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Dark Meadow and McMeadow Forest Restoration Projects, Upper Grande Ronde River Subbasin, Union County, Oregon

Dear Ms. Wood:

Enclosed is a document containing a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of carrying out the proposed Dark Meadow and McMeadow Forest Restoration Projects in the upper Grande Ronde River subbasin, Union County, Oregon. In this Opinion, NOAA Fisheries concludes that the proposed action is not likely to jeopardize the continued existence of ESA-listed Snake River (SR) steelhead (*Oncorhynchus mykiss*) or SR spring/summer chinook salmon(*O. tshawytscha*). As required by section 7 of the ESA, NOAA Fisheries includes reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the impact of incidental take associated with this action.

This document also contains a consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for chinook salmon. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this letter, please contact Mike Bianchi of my staff in the Oregon Habitat Branch at 541.975.1835, ext.227.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Karen Haines, USFS
Jeff Zakel, ODFW
Gary Miller, USFWS
Dorothy Mason, BLM
Bob Rock, WWNF

Endangered Species Act - Section 7 Consultation
Biological Opinion

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Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Dark Meadow and McMeadow Forest Restoration Projects
Upper Grande Ronde Subbasin,
Union County, Oregon

Agency:	U. S. Forest Service
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	November 20, 2003
Issued by:	for Michael R Crouse D. Robert Lohn Regional Administrator
Refer to:	**2003/00978**

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1. INTRODUCTION

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1544), as amended, establishes a national program for conserving threatened and endangered species of fish, wildlife, plants, and the habitat on which they depend. Section 7(a)(2) of the ESA requires Federal agencies to consult with NOAA's National Marine Fisheries Service (NOAA Fisheries) and U.S. Fish and Wildlife Service (together "Services"), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their designated critical habitats. This biological opinion (Opinion) is the product of an interagency consultation pursuant to section 7(a)(2) of the ESA and implementing regulations 50 CFR 402.

The analysis also fulfills the essential fish habitat (EFH) requirements under the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan. Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

The U.S. Forest Service, Wallowa Whitman National Forest (WWNF), La Grande Ranger District (LGRD) proposes to carry out the Dark Meadow and McMeadow Forest Restoration Projects (Projects). The purpose of the proposed Projects are to improve forest health through timber sale, forest thinning, road removal, and fuels reduction activities. The administrative record for this consultation is on file at the Oregon Habitat Branch office.

1.1 Background and Consultation History

On August 1, 2003, NOAA Fisheries received a letter dated July 24, 2003, with attached project information from the WWNF requesting ESA section 7 informal consultation and concurrence with a determination of "may affect, not likely to adversely affect" (NLAA) Snake River (SR) steelhead (*Oncorhynchus mykiss*), SR spring/summer chinook (*O. tshawytscha*). After reviewing the request, NOAA Fisheries' staff contacted the WWNF Threatened and Endangered Species Coordinator (TES Coordinator), Bob Mason, and indicated that the activities contained within the proposed action were reasonably certain to have adverse effects, and therefore, outside of the scope of an NLAA determination. Project information provided by the WWNF indicates that short-term, localized adverse effects are likely to result from project implementation. A nonconcurrence and request for formal consultation letter dated September 18, 2003, was sent to the WWNF and formal consultation was initiated at that time.

1.2 Proposed Action

The purpose of the Dark Meadow and McMeadow Forest Restoration Projects is to return forest stands to a condition that is within their historic range of variation (HRV). To accomplish this

the WWNF proposes a suite of activities to reduce disease, dead woody material, and undesirable or over-stocked tree species. To accomplish this end, WWNF will carry out timber harvests, burning prescriptions, and forest thinning and fuels reduction prescriptions. Timber harvest treatments will be carried out on 5,056 acres within the McMeadow project area and 1,374 acres (1,002 acres in the Meadow Creek watershed) of harvest in the Dark Meadow project area. The Equivalent Clear-Cut Area (ECA) is not expected to increase as a result of the timber harvest activities. The following are descriptions of activities that are considered to be the most relevant to SR steelhead and SR spring/summer chinook in the project area.

Roads

In the Dark Meadow project area, approximately 1.5 miles of road are scheduled for obliteration within the Riparian Habitat Conservation Area (RHCA) as defined in Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (USDA and USDI 1995). Included will be 12 stream crossings at distances ranging from 0.05 miles to 0.40 miles from Dark Meadow Creek (a perennial fish-bearing stream). One culvert will be replaced 0.13 miles from the stream. Approximately 9.7 miles of road is scheduled for reconstruction (1.27 in RHCA), 0.03 miles is scheduled for new construction, and 3.80 miles are scheduled for temporary road construction.

In the McMeadow project area, 9.25 miles of road will be closed, including 0.54 miles within the RHCA. Sixty miles of road will be decommissioned, 12 miles are within RHCAs. Decommissioning will include removal of drainage structures, wing ripping, and road recontouring. Two culverts will be installed in an intermittent channel within 0.16 miles of the stream, and 1.3 miles of road will be decommissioned and rehabilitated within the RHCA along an intermittent channel. There will be 12 miles (2.3 within RHCA) of road reconstruction, one mile of new road construction that will cross an intermittent non-fish-bearing stream twice, and 12.45 miles of temporary roads (none in RHCA) constructed in the McMeadow project area.

Conservation measures for road activities include: (1) Recontouring or subsoiling of all obliterated roads, removal of culverts on obliterated roads; (2) erosion control measures, such as seeding and straw bales; (3) pollution and erosion control plan; (4) conducting work during the Oregon Department of Fish and Wildlife's (ODFW) inwater work period and during dry soil conditions; and (5) the equipment staging, fuel storage, and fueling of vehicles and equipment will be a minimum distance of 150 feet from any stream channel.

Commercial Harvest

There are 1,374 acres of proposed commercial harvest within the Dark Meadow project area and 5,056 acres of commercial harvest within the McMeadow project area. Harvest will be completed with the following treatment types, commercial thinning, salvage harvest, sanitation/salvage, sanitation, shelterwood, improvement cuts, improvement/salvage, and fuels reduction removals. No live trees larger than 21 inches diameter at breast height (dbh) will be harvested and there will be no commercial harvest activities within RHCAs. The Equivalent Clear Cut Area (ECA) is not expected to appreciably increase as a result of these harvest activites.

RHCA Thinning

As described in the BA there will be up to 75 acres of non-commercial thinning in the RHCAs within the Dark Meadow project area. Non-commercial thinning entails the removal of trees to a spacing of 8-foot by 8-foot to10-foot by 10-foot spacing with a 25-foot no-cut buffer along the perennial streams and a 10-foot no-cut buffer along intermittent streams. There is no expected ground disturbance within the RHCA and there will be no trees >9 inches dbh cut. No materials are to be piled or burned in these areas, all trees will be felled and left on site.

In the McMeadow project area, up to 133 acres of RHCA will undergo pre-commercial thinning. Pre-commercial thinning will entail cutting trees <3 inches dbh and less than 10 feet in height. The spacing will be 10x10 to 16x16 feet apart and all materials will be left on site. All of these activities will be completed by people on foot using chainsaws. It is unclear how many stream miles will be thinned in total as the specific siting of RHCA treatment was not described in the BA. NOAA Fisheries' calculations estimates between 2.5 and 5.5 linear miles of RHCA will be thinned.

Prescribed Burning

There are 10,205 acres of prescribed burning proposed as a part of the Dark Meadow Project. The McMeadow project has a proposed 3,226 acres of prescribed burning. The proposed treatments will remove trees of 7 inches dbh or less. The fires will be of low intensity and conducted during times when environmental conditions favor accomplishing the burning prescription.

Prescribed fire and ignition will occur within RHCAs. Ignition can occur within 150 feet of perennial and/or fish-bearing streams and within 100 feet of any intermittent stream. Fire will be allowed to back into riparian areas. Bare mineral soil fire lines will be used minimally, burn units will be approximately 200 acres, and a maximum of 2,000 acres per year, in each project area, will be burned over the next 10 years.

Conservation measures for burning include: (1) No fire ignition within 150 feet of perennial and/or fish bearing streams and 100 feet of intermittent streams; (2) the use of low intensity fires; and (3) the use of "wet line" to contain fires when feasible. Wet line is the soaking of vegetation and ground cover with water and used to prevent fire from spreading beyond the prescribed area.

1.3 Description of the Action Area

An action area is defined by the Services' regulations (50 CFR Part 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area affected by the proposed action starts at the Projects' location and extends upstream or downstream based on the potential for impairing fish passage, stream hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed, where actions described in this Opinion lead to additional activities, or affect ecological functions, contributing to stream degradation. The action area for the proposed Projects includes the Meadow Creek watershed. This area

serves as a spawning and rearing habitat as well as a migratory corridor for juvenile and adult SR steelhead, SR spring/summer chinook, and is designated critical habitat for spring/summer chinook salmon.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

The objective of this Opinion is to determine whether the proposed Projects are likely to jeopardize the continued existence of the SR steelhead, SR spring/summer chinook salmon or destroy or adversely modify spring/summer chinook salmon critical habitat.

2.1.1 Evaluating the Effects of the Proposed Action

The standards for determining jeopardy and destruction or adverse modification of critical habitat are set forth in section 7(a)(2) of the ESA. In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps of the consultation regulations and when appropriate combines them with its Habitat Approach (NOAA Fisheries 1999): (1) Consider the biological requirements and status of the listed species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species, and whether the action is consistent with any available recovery strategy; and (4) determine whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the effects of the environmental baseline, and any cumulative effects, and considering measures for survival and recovery specific to other life stages. In completing the this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the ESA-listed species or result in the destruction or adverse modification of critical habitat. If jeopardy or adverse modification are found, NOAA Fisheries may identify reasonable and prudent alternatives for the action that avoid jeopardy and/or adverse modification of critical habitat.

The fourth step above (jeopardy/adverse modification) requires a two-part analysis. The first part focuses on the action area and defines the proposed action's effects in terms of the species' biological requirements in that area (*i.e.*, effects on essential features). The second part focuses on the species itself. It describes the action's effects on individual fish, populations, or both, and places that impact in the context of the ESU as a whole. Ultimately, the analysis seeks to determine whether the proposed action is likely to jeopardize a listed species' continued existence or destroy or adversely modify its critical habitat.

2.1.2 Biological Requirements

The first step NOAA Fisheries uses when applying ESA section 7(a)(2) to the listed ESUs considered in this Opinion includes defining the species' biological requirements within the action area. Biological requirements are population characteristics necessary for the listed ESUs to survive and recover to naturally-reproducing population sizes, at which time protection under the ESA would become unnecessary. The listed species' biological requirements may be described as characteristics of the habitat, population or both (McElhany *et al.* 2000). Interim abundance targets for the MCR steelhead within the John Day River are represented in Table 1.

For actions that affect freshwater habitat, NOAA Fisheries may describe the habitat portion of a species' biological requirements in terms of a concept called properly functioning condition (PFC). The PFC is defined as the sustained presence of natural, habitat-forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation (NOAA Fisheries 1999). The PFC then constitutes the habitat component of a species' biological requirements. Although NOAA Fisheries is not required to use a particular procedure to describe biological requirements, it typically considers the status of habitat variables in a matrix of pathways and indicators (MPI) (NOAA Fisheries 1996) that were developed to describe PFC in forested montane watersheds. In the PFC framework, baseline environmental conditions are described as "properly functioning," "at risk," or "not properly functioning."

The Projects will occur within designated critical habitat for the SR chinook salmon ESU. Freshwater critical habitat can include all waterways, substrates, and adjacent riparian areas below longstanding, natural impassable barriers (*i.e.*, natural waterfalls in existence for at least several hundred years) and dams that block access to former habitat.

Essential features of critical habitat for the listed species are: (1) Substrate, (2) water quality, (3) water quantity, (4) water temperature, (5) water velocity, (6) cover/shelter, (7) food (juvenile only), (8) riparian vegetation, (9) space, and (10) safe passage conditions. For this consultation, the essential features that function to support successful adult and juvenile migration, adult holding, spawning, incubation, rearing, and growth and development to adulthood include substrate, water quality, water temperature, cover/shelter, and riparian vegetation. All of these essential features of critical habitat are included in the MPI (NMFS 1996) (discussed in more detail in section 2.2.1).

2.1.3 Status and Generalized Life History of Listed Species

In this step, NOAA Fisheries also considers the current status of the listed species within the action area, taking into account population size, trends, distribution, and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species and also considers any new data that is relevant to the species' status.

Snake River Steelhead

The SR steelhead evolutionarily significant unit (ESU) was listed as threatened under the ESA by NOAA Fisheries on August 18, 1997 (56 FR 43937). Protective regulations for SR steelhead were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42423). Biological information concerning the SR steelhead is found in Busby *et al.* (1995, 1996). The major drainages in the SR steelhead ESU are the Salmon, Lemhi, Imnaha, Tucannon, and Grande Ronde rivers. Biological information for SR steelhead is found in Busby *et al.* (1996). Recent counts of upstream migration at Lower Granite Dam, show at least some short-term improvement in the levels of adult steelhead returning to spawn. The Grande Ronde River is one of the principal basins in the Snake River drainage contributing to salmon and steelhead production.

Table 1. Interim Abundance Targets for Snake River Steelhead in the Grande Ronde River Spawning Aggregation (Adapted from NOAA 2003)

ESU/Spawning Aggregations	Interim Abundance Targets	Interim Productivity Objectives
Snake River Steelhead ESU		Snake River ESU steelhead populations are currently well below recovery levels. The geometric mean Natural Replacement Rate (NRR) will therefore need to be greater than 1.0.
Grande Ronde		
Lower Grande Ronde	2600	
Joseph Creek	1400	
Middle Fork	2000	
Upper Mainstem	4000	
Imnaha	2700	

The SR steelhead ESU contains portions of southeastern Washington, northeastern Oregon, and north/central Idaho. The environmental conditions within this ESU are generally drier and warmer than in other steelhead ESUs. The SR steelhead run is considered a summer run based upon adult upstream migration. The adults enter the Columbia River in the summer migrating upriver until they spawn in the spring between March and May. Runs found in the Grande Ronde system are generally A-run fish, or fish that have spent one year in the ocean.

There are very few annual estimates of steelhead returns throughout the Snake River Basin. Returns over the Lower Granite Dam were low during the 1990s, however, run estimates in the Grande Ronde and Imnaha improved since the 1990s (NOAA 2003). The long-term population trends have remained negative, while the short-term population trends for the ESU have improved in comparison to the time frame analyzed in the last status review (NOAA 2003). The median long-term population growth rate (λ) is 0.998 based upon the assumption that only natural origin spawners are returned from wild stock (NOAA 2003). The short-term λ based on the same assumption is 1.013 (NOAA 2003). Assuming that both hatchery and wild fish

contribute to the natural production in proportion to their numbers the long-term λ is 0.733 and short-term λ is 0.753 (NOAA 2003). In spite of the recent increases in numbers the majority of populations in the ESU with abundance data are still well below the interim abundance targets (Table 1).

Snake River Spring/Summer Chinook

SR spring/summer chinook salmon ESU was listed as threatened on April 22, 1992 (57 FR 14653). SR spring/summer chinook enter the Columbia River in late February and early March in high elevation areas. The fish hold in the cooler deep pools until the late summer and early fall when they return to their native streams and begin spawning. The eggs incubate through the fall and winter and emergence begins in the early winter and late spring. Juvenile spring/summer chinook exhibit a stream type life history. The fish will rear for one year in fresh water before they migrate out to the ocean in the spring of their second year. The fish generally return from the ocean after two or three years.

There are several factors for the decline of SR spring/summer chinook salmon. Habitat loss from hydroelectric development, habitat degradation from land use activities, and impacts from hatcheries are all responsible for the decline of the stocks. Recent abundance for the ESU has been increased. The geometric mean return of naturally-reproducing spawners from 1997 to 2001 was 3,700, which is well below the interim abundance targets for the ESU. The 2001 run was estimated to be 17,000 naturally-reproducing spawners (NOAA 2003). The short-term and long-term productivity estimates (λ) are still well below the interim productivity target for the ESU (Table 2). The Grande Ronde and Imnaha Rivers had the greatest increase in λ for the short-term.

Table 2. Interim Abundance and Productivity Targets for SR Spring/Summer Chinook in Oregon (adapted from NOAA 2003)

ESU/Spawning Aggregations	Interim Abundance Target	Interim Productivity Target
Snake River Spring/Summer Chinook ESU		"For delisting to be considered, the eight year (approximately two generation) geometric mean cohort replacement rate of a listed species must exceed 1.0 during the eight years before delisting. For spring/summer chinook salmon, this goal must be met for 80% of the index areas available for natural cohort replacement rate estimation." (Proposed Snake River Recovery Plan; NMFS 1995)
Grande Ronde River	2000	
Imnaha	2500	

Essential features of the adult spawning, juvenile rearing, and adult and migratory habitat for these species are: Substrate, water quality, water quantity, water temperature, water velocity,

cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. (Bjornn and Reiser, 1991; NOAA Fisheries, 1996b; Spence *et al.*, 1996). The essential features that the proposed Projects may affect are: Substrate, water quality, water temperature,, cover/shelter, and riparian vegetation.

2.1.4 Environmental Baseline in the Action Area

The environmental baseline is defined as: "the past and present impacts of all Federal, state, or private actions and other human activities in the action area, including the anticipated impacts of all proposed Federal projects in the action area that have undergone section 7 consultation and the impacts of state and private actions that are contemporaneous with the consultation in progress" (50 CFR 402.02). NOAA Fisheries evaluates the relevance of the environmental baseline in the action area to the species' current status. In describing the environmental baseline, NOAA Fisheries evaluates essential features of habitat and the listed Pacific salmon ESUs affected by the proposed action.

In general, the environment for listed species in the Columbia River Basin (CRB), including those that migrate past or spawn upstream from the action area, has been dramatically affected by the development and operation of the Federal Columbia River Power System (FCRPS). Storage dams have eliminated mainstem spawning and rearing habitat, and have altered the natural flow regime of the Snake and Columbia Rivers, decreasing spring and summer flows, increasing fall and winter flow, and altering natural thermal patterns. Power operations cause fluctuation in flow levels and river elevations, affecting fish movement through reservoirs, disturbing riparian areas and possibly stranding fish in shallow areas as flows recede. The eight dams in the migration corridor of the Snake and Columbia Rivers kill or injure a portion of the smolts passing through the area. The low velocity movement of water through the reservoirs behind the dams slows the smolts' journey to the ocean and enhances the survival of predatory fish (Independent Scientific Group 1996; National Research Council 1996). Formerly complex mainstem habitats in the Columbia, Snake, and Willamette Rivers have been reduced, for the most part, to single channels, with floodplains reduced in size, and off-channel habitats eliminated or disconnected from the main channel (Sedell and Froggatt 1984; Independent Scientific Group 1996; Coutant 1999). The amount of large woody debris in these rivers has declined, reducing habitat complexity and altering the rivers' food webs (Maser and Sedell 1994).

Other human activities that have degraded aquatic habitats or affected native fish populations in the CRB include stream channelization, elimination of wetlands, construction of flood control dams and levees, construction of roads (many with impassable culverts), timber harvest, splash dams, mining, water withdrawals, unscreened water diversions, agriculture, livestock grazing, urbanization, outdoor recreation, fire exclusion/suppression, artificial fish propagation, fish harvest, and introduction of non-native species (Henjum *et al.* 1994; Rhodes *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; Lee *et al.* 1997). In many watersheds, land management and development activities have: (1) Reduced connectivity (*i.e.*, the flow of energy, organisms, and materials) between streams, riparian areas, floodplains, and uplands; (2)

elevated fine sediment yields, degrading spawning and rearing habitat; (3) reduced large woody material that traps sediment, stabilizes streambanks, and helps form pools; (4) reduced vegetative canopy that minimizes solar heating of streams; (5) caused streams to become straighter, wider, and shallower, thereby reducing rearing habitat and increasing water temperature fluctuations; (6) altered peak flow volume and timing, leading to channel changes and potentially altering fish migration behavior; and (7) altered floodplain function, water tables and base flows (Henjum *et al.* 1994; McIntosh *et al.* 1994; Rhodes *et al.* 1994; Wissmar *et al.* 1994; National Research Council 1996; Spence *et al.* 1996; Lee *et al.* 1997).

To address problems inhibiting salmonid recovery in CRB tributaries, the Federal resource and land management agencies developed the *All H Strategy* (Federal Caucus 2000). Components of the *All H Strategy* commit these agencies to increased coordination and a fast start on protecting and restoring.

Environmental baseline conditions within the action area were evaluated for the subject actions at the project level and watershed scales. The results of this evaluation, based on the "matrix of pathways and indicators" (MPI) described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species.

Within the Meadow Creek watershed, 3 of the 18 habitat indicators in the MPI, including pool frequency, width/depth ratio, and streambank condition were rated as "functioning at risk." Nine of the 18 indicators, including temperature, sediment/turbidity, substrate embeddedness, large woody debris, pool quality, peak/base flows, drainage network increases, road density and location, and disturbance history were rated as "not properly functioning." Six of the indicators, including chemical contaminants/nutrients, physical barriers, off channel habitat, refugia, floodplain connectivity, and RHCA's were rated as "properly functioning." Three of the indicators did not have data available and included pool frequency, pool quality, and width/depth ratio. This information is summarized in Table 2, below.

Table 2. Summary of Watershed Conditions in the Action Area

MPI Pathways	MPI Indicators	Watershed and MPI Rating[1]
		Meadow Creek
Water Quality	Temperature	NPF
	Sediment/Turbidity	NPF
	Chemical Contaminants/Nutrients	PF
Access	Physical barriers	PF

Habitat Elements	Substrate Embeddedness	NPF
	Large Woody Debris	NPF
	Pool Frequency	FAR
	Pool Quality	NPF
	Off Channel Habitat	PF
	Refugia	PF
Channel Conditions & Dynamics	Width/depth ratios	FAR
	Streambank Condition	FAR
	Floodplain connectivity	PF
Flow/ Hydrology	Change in Peak Base Flow	NPF
	Drainage Network Increase	NPF
Watershed Condition	Road Density and Location	NPF
	Disturbance History	NPF
	RHCAs	PF

[1] The condition of each MPI parameter is indicated in the following manner:
PF = properly functioning, FAR= functioning at risk, NPF= not properly functioning

The biological requirements of the listed species are not currently being met under the environmental baseline. Conditions in the action area would have to improve, and any further degradation of the baseline, or delay in improvement of these conditions would probably further decrease the likelihood of survival and recovery of the listed species under the environmental baseline.

Pacific salmon populations also are substantially affected by variation in the freshwater and marine environments. Ocean conditions are a key factor in the productivity of Pacific salmon populations. Stochastic events in freshwater (flooding, drought, snowpack conditions, volcanic eruptions, *etc.*) can play an important role in a species' survival and recovery, but those effects tend to be localized compared to the effects associated with the ocean. The survival and recovery of these species depends on their ability to persist through periods of low natural survival due to ocean conditions, climatic conditions, and other conditions outside the action area. Freshwater survival is particularly important during these periods because enough smolts must be produced so that a sufficient number of adults can survive to complete their oceanic migration, return to spawn, and perpetuate the species. Therefore it is important to maintain or restore essential features to sustain the ESU through these periods. Additional details about the importance of freshwater survival to Pacific salmon populations can be found in Federal Caucus (2000), NOAA Fisheries (2000), and Oregon Progress Board (2000).

2.1.5 Analysis of Effects

Effects of the action are defined as: "the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with the action, that will be added to the environmental baseline" (50 CFR 402.02). Direct effects occur at the Projects' site, and may extend upstream or downstream based on the potential for impairing the value of habitat for meeting the species' biological requirements. Indirect effects are defined in 50 CFR 402.02 as "those that are caused by the proposed action and are later in time, but still are reasonably certain to occur." They include the effects on listed species or habitat of future activities that are induced by the proposed action and that occur after the action is completed. "Interrelated actions are those that are part of a larger action and depend on the larger action for their justification" (50 CFR 403.02). "Interdependent actions are those that have no independent utility apart from the action under consideration" (50 CFR 402.02).

In its jeopardy analysis, NOAA Fisheries evaluates the effects of proposed actions on listed species and seeks to answer the question of whether the species can be expected to survive with an adequate potential for recovery. In watersheds where critical habitat has been designated, NOAA Fisheries must make a separate determination of whether the action will result in the destruction or adverse modification of critical habitat (ESA, section 3, (3) and section 3(5A)).

2.1.6 Habitat Effects

NOAA Fisheries will consider any scientifically credible analytical framework for determining an activity's effect. To streamline the consultation process and to lead to more consistent effects determinations across agencies, NOAA Fisheries, where appropriate, recommends that action agencies use the MPI and procedures in NOAA Fisheries (1996), particularly when their proposed action would take place in forested montane environments. NOAA Fisheries is working on similar procedures for other environments. Regardless of the analytical method used, if a proposed action is likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward PFC, it cannot be found consistent with conserving the species.

For the streams typically considered in salmon habitat-related consultations, a watershed is a logical unit for analysis of potential effects of an action (particularly for actions that are large in scope or scale). Healthy salmonid populations use habitats throughout watersheds (Naiman *et al.* 1992), and riverine conditions reflect biological, geological and hydrological processes operating at the watershed level (Nehlsen *et al.* 1997; Bisson *et al.* 1997; and NOAA Fisheries 1999).

Although NOAA Fisheries prefers watershed-scale consultations due to greater efficiency in reviewing multiple actions, increased analytic ability, and the potential for more flexibility in management practices, often it must analyze effects at geographic areas smaller than a watershed or basin due to a proposed action's scope or geographic scale. Analyses that are focused at the

scale of the site or stream reach may not be able to discern whether the effects of the proposed action will contribute to or be compounded by the aggregate of watershed impacts. This loss of analytic ability typically should be offset by more risk averse proposed actions and ESA analysis to achieve parity of risk with the watershed approach (NOAA Fisheries 1999).

The BA for the proposed Projects provides an analysis of the effects of the proposed action on SR steelhead and SR spring/summer chinook in the action area. The analysis uses the MPI and procedures in NOAA Fisheries (1996), the information in the BA, and the best scientific and commercial data available to evaluate elements of the proposed action that have the potential to affect the listed fish or essential features of their habitat.

NOAA Fisheries believes the proposed Projects are LAA for the following reasons:
(1) Although the road decommissioning projects will decrease the road density and long-term sediment/turbidity within the sub-watersheds, there will be a short-term increase in road density and sediment/turbidity in sub-watersheds that are currently not properly functioning for these two matrix pathways, and this short-term increase will not be eliminated until the effects of these actions are ameliorated through re-vegetation; (2) culvert removals will likely cause a temporary increase in sediment/turbidity until areas are stabilized with vegetation; (3) it is unclear how many stream miles will be included in thinning projects. A calculated estimate of 2.5 to 8.5 miles of stream will be thinned, which will likely cause a minor decrease to stream shade, an increase in sediment/turbidity, and a possible decrease for large wood recruitment in the near future. The distribution of this activity in the watershed is not described in the BA; (4) the effects of burning within RHCAs are likely to include the release of sediment, increase in turbidity, and removal of ground cover in a system that is currently "not properly functioning" for sediment/turbidity, substrate embeddedness, and temperature. All other habitat conditions in the MPI for the Meadow Creek watershed will be maintained in the long term. As a result of these activities, the potential for adverse effects to ESA-listed anadromous fish from the culvert removal and replacement, prescribed fire, temporary increase in road density are greater than insignificant. These potential adverse effects to ESA-listed salmonids associated with inwater and near-water construction activities, prescribed fire, and riparian thinning, include mortality from exposure to suspended sediments (turbidity), and behavioral changes resulting from elevated turbidity (Sigler *et al.* 1984, Berg and Northcote 1985, Whitman *et al.* 1982, Gregory 1998).

Suspended sediment and turbidity influences on fish reported in the literature range from beneficial to detrimental. Elevated total suspended solids (TSS) have been reported to enhance cover conditions, reduce piscivorus fish/bird predation rates, and improve survival. Elevated TSS have also been reported to cause physiological stress, reduce growth, and adversely affect survival. Of key importance in considering the detrimental effects of TSS on fish are the frequency and the duration of the exposure, not just the TSS concentration.

Behavioral avoidance of turbid waters may be one of the most important effects of suspended sediments (DeVore *et al.* 1980, Birtwell *et al.* 1984, Scannell 1988). Salmonids have been observed to move laterally and downstream to avoid turbid plumes (McLeay *et al.* 1984, 1987,

Sigler *et al.* 1984, Lloyd 1987, Scannell 1988, Servizi and Martens 1991). Juvenile salmonids tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, unless the fish need to traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potentially positive reported effect is providing refuge and cover from predation (Gregory and Levings 1988).

Fish that remain in turbid, or elevated TSS, waters experience a reduction in predation from piscivorus fish and birds (Gregory and Levings 1998). In systems with intense predation pressure, this provides a beneficial trade off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth). Turbidity levels of about 23 nephalometric turbidity units (NTU) have been found to minimize bird and fish predation risks (Gregory 1993). Exposure duration is a critical determinant of the occurrence and importance of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonids have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with flood events, and are adapted to such high pulse exposures. Adult and larger juvenile salmonids may be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, chronic exposure can cause physiological stress responses that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Turbidity, at moderate levels, has the potential to adversely affect primary and secondary productivity, and at high levels, has the potential to injure and kill adult and juvenile fish, and may also interfere with feeding (Spence *et al.* 1996). Newly-emerged salmonid fry may be vulnerable to even moderate amounts of turbidity (Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine, redeposited sediments also have the potential to adversely affect primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success (Bell 1991) and cover for juvenile salmonids (Bjornn and Reiser 1991). Increased sedimentation may also lead to increased embeddedness of spawning substrates downstream of the proposed Projects. These effects are likely to be minimal due to the use of sediment control measures such as silt fences and straw bales and completing all instream construction activities during periods of low flow (July and August).

Disturbance of riparian vegetation will result from operation of heavy machinery near the stream and could lead to decreased shade, increased water temperatures, and decreased streambank stability until riparian vegetation is re-established. The WWNF has included several conservation measures in the Projects' design that will ensure riparian disturbance resulting from the proposed construction activities will remain minimal.

Excavation in the stream channel associated with culvert work will elevate the risk for chemical contamination of the aquatic environment within the action area. Because the potential for chemical contamination should be localized and brief, the probability of direct mortality is

negligible. Scheduling the in-water work for the designated in-water work window will minimize the risk from chemical contamination during these activities.

The aforementioned adverse effects are likely to be temporary and of short duration. The maximum period of time during which construction activities will occur is one month. In the long term, all aquatic habitat factors will be maintained. Fish passage and stream channel morphology at the Projects' site will improve as a result of the proposed actions.

Manipulation of the streambed to replace existing culverts is likely to mobilize sediment that may enter the stream. The short-term increase in turbidity could temporarily reduce feeding efficiency for juvenile steelhead within the action area. Increased sedimentation may also lead to increased embeddedness of spawning substrates downstream of the proposed Projects.

In the long term, the proposed Projects will have beneficial effects on SR steelhead and chinook habitat. The replacement of culverts, road decommissioning, will lessen the current impacts that roads are having in the Meadow Creek watershed by decreasing road density and improving the hydrologic condition within the watershed. Forest health projects, to include thinning and burning, will benefit the ESA-listed fishes by improving the watershed condition by increasing the size and vigor of trees in a compressed time frame, and decrease the probability of a stand-replacing wildfire.

2.1.7 Species Effects

The effect that a proposed action has on particular essential features or MPI pathways can be translated into a likely effect on population growth rate. In the case of this consultation, it is not possible to quantify an incremental change in survival for SR steelhead or SR spring/summer chinook.

While population growth rates have been calculated at the large ESU scale, changes to the environmental baseline from the proposed action were described only within the action area (in this case, a watershed). An action that improves habitat in a watershed, and thus helps meet essential habitat feature requirements, may therefore, increase λ for the portion of the ESU in the action area.

Based on the effects described above, the proposed Projects will likely have a long-term, positive effect on the survival and recovery of the SR steelhead. Because the Meadow Creek watershed is a small watershed compared to the range of the SR steelhead and spring/summer chinook ESU's, a population increase may not be measurable at the ESU scale. However, because forest health is being restored to a watershed that ESA-listed salmonids use, an increase in the distribution and/or population within the watershed may occur.

2.1.8 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." These activities within the action area also have the potential to adversely affect the listed species. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being reviewed through separate section 7 consultation processes. Federal actions that have already undergone section 7 consultations have been added to the description of the environmental baseline in the action area.

State, tribal, and local government actions will likely be in the form of legislation, administrative rules or policy initiatives. Government and private actions may encompass changes in land and water uses–including ownership and intensity–any of which could adversely affect listed species or their habitat. Government actions are subject to political, legislative, and fiscal uncertainties.

Changes in the economy have occurred in the last 15 years, and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for buildable land, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement, and this trend is likely to continue. Such population trends will result in greater overall and localized demands for electricity, water, and land in the action area; will affect water quality directly and indirectly; and will increase the need for transportation, communication, and other infrastructure. The impacts associated with these economic and population demands will probably affect habitat features such as water quality and quantity, which are important to the survival and recovery of the listed species. The overall effect will likely be negative, unless carefully planned for and mitigated.

Currently, private timber harvests in Oregon are regulated by the Oregon Forest Practices Act. This regulations for private timber harvest and road building are less restrictive than those on the National Forests Timber harvest on private lands has generally increased in recent years. The WWNF describes the adverse cumulative effects from proposed private timber harvests as high. The BA states, "The lack of complete regulations and enforcement of existing regulations on private land timber harvests increses the likelihood of cumulative adverse effects."

Between 1990 and 2000, the population of Union County increased by 3.9%.[1] Thus, NOAA Fisheries assumes that future private and state actions will continue within the action area, but at increasingly higher levels as population density climbs. Most future actions by the State of

[1] U.S. Census Bureau, State and County Quickfacts, Coos County, Oregon. Available at http://quickfacts.census.gov/qfd/states/41/41061.html

Oregon are described in the Oregon Plan for Salmon and Watershed measures, which includes a variety of programs designed to benefit salmon and watershed health.

2.1.9 Consistency with Listed Species ESA Recovery Strategies

Recovery is defined by NOAA Fisheries regulations (50 CFR 402) as an "improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4 (a)(1) of the Act." Recovery planning is underway for listed Pacific salmon in the Northwest with technical recovery teams identified for each domain. Recovery planning will help identify measures to conserve listed species and increase the survival of each life stage. NOAA Fisheries also intends that recovery planning identify the areas/stocks most critical to species conservation and recovery and thereby evaluate proposed actions on the basis of their effects on those areas/stocks.

Recovery planning will identify the feasible measures that are needed in each stage of the salmonid life cycle for conservation and survival within a reasonable time. Measures are feasible if they are likely both to be implemented and to result in the required biological benefit. A time period for recovery is reasonable depending on the time requirements for implementation of the measures and the confidence in the survival of the species while the plan is implemented. The plan must demonstrate the feasibility of its measures, the reasonableness of its time requirements, and how the elements are likely to achieve the conservation and survival of the listed species based on the best science available.

NOAA Fisheries has developed guidelines for basin-level, multi-species recovery planning on which individual, species-specific recovery plans can be founded. "Basin-level" encompasses habitat, harvest, hatcheries, and hydro. The recovery planning analysis is contained in the document entitled *Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy* (hereafter, the Basinwide Recovery Strategy [Federal Caucus 2000]). The Basinwide Recovery Strategy will be used to guide recovery planing for SR steelhead and SR spring/summer chinook. The recovery plan will provide the particular statutorily required elements of recovery goals, criteria, management actions, and time estimates that are not developed in the Basinwide Recovery Strategy.

Among other things, the Basinwide Recovery Strategy calls for restoration of degraded habitats on a priority basis to produce significant measurable benefits for listed anadromous and resident fish. Immediate and long-term priorities for restoration measures relevant to this consultation include the following general habitat improvements for tributary reaches:

- Protecting the currently productive habitat.
- Increasing the amount of habitat.
- Improve water quality.

Until the species-specific recovery plans are developed, the FCRPS Opinion and the related Basinwide Recovery Strategy provides the best guidance for judging the significance of an

individual action relative to the species-level biological requirements. In the absence of completed recovery plans, NOAA Fisheries strives to ascribe the appropriate significance to actions to the extent available information allows. Where information is not available on the recovery needs of the species, either through recovery planning or otherwise, NOAA Fisheries applies a conservative substitute that approximates what would be expected of an action if such information were available.

The USFS has specific commitments to uphold under the Basinwide Salmon Recovery Strategy. For Federal lands, PACFISH, the Northwest Forest Plan, and land management plans define these commitments. The proposed action is consistent with the specific commitments and primary objectives of the Basinwide Salmon Recovery Strategy.

2.1.10 Conclusions

NOAA Fisheries has determined that, when the effects of the subject action addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of SR steelhead and SR spring/summer chinook, nor will the proposed Projects destroy or adversely modify designated critical habitat for SR spring/summer chinook salmon.

NOAA Fisheries' conclusions are based on the following considerations: (1) Protection measures described above and in the BA will minimize or eliminate short-term impacts associated with the proposed Projects; (2) no essential habitat features are expected to be degraded in the long term, and some should be improved with the implementation of the Projects; (3) the condition of vegetation within the watershed will be improved as a result of activities associated with the Projects and will reduce sediment, particulate organic matter, and chemicals from reaching the water courses; (4) the equivalent clear-cut area (ECA) is not expected to increase from proposed activities, (5) total road density is expected to decrease in the long-term and; (6) monitoring reports with project-specific information will be presented yearly to the Wallowa-Whitman Level I (Level I) team describing the activities as implemented and their effects to ESA-listed species. Thus, the proposed action is not likely to impair currently properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.11 Conservation Recommendations

Conservation recommendations are defined as "discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information" (50 CFR 402.02). Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. NOAA Fisheries has no conservation recommendations to make at this time regarding the action addressed in this Opinion.

2.1.12 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is likely to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operation causing such take must cease, pending conclusion of the reinitiated consultation.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536].

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of Take

The proposed action is reasonably certain to result in incidental take of juvenile SR steelhead and SR spring/summer chinook because: (1) The listed species are known to occur in the action area; and (2) the proposed action is likely to cause impacts significant enough to cause death or injury, or impair feeding, breeding, migrating, or sheltering for the listed species.

The temporary increase in sediment and turbidity associated with these Projects is likely to cause fish to avoid disturbed areas of the stream, both within and downstream of the Projects' area. Effects from turbidity are likely to be of short duration, because turbidity levels will quickly

return to previous levels once work is completed. Harm, which is defined as an act that may include significant habitat modification or degradation where it actually kills or injures fish by impairing breeding, spawning, rearing, migrating, feeding, or sheltering, is expected to occur in the form of behavior modification (avoidance) of disturbed riparian areas. ESA-listed anadromous salmonids are expected to avoid areas of riparian disturbance, vegetation removal, and decreased shade. This harm is expected to be reduced as the existing vegetation responds to treatment.

Because of the inherent biological characteristics of aquatic species such as SR steelhead and chinook salmon, the likelihood of discovering take attributable to this action is very limited. Take associated with the effects of actions such as these is largely unquantifiable in the short term, and may not be measurable as long-term effects on the species' habitat or population. Therefore, although NOAA Fisheries expects the habitat-related effects of these actions to cause some low level of incidental take, the best scientific and commercial data available are not sufficient to enable NOAA Fisheries to estimate a specific amount of incidental take because of those habitat-related effects. In instances such as these, NOAA Fisheries designates the expected level of take as "unquantifiable".

The authorized take includes only that caused by the proposed action within the action area as defined in this Opinion.

2.2.2 Reasonable and Prudent Measures

Reasonable and prudent measures (RPMs) are non-discretionary measures to minimize take, that may or may not already be part of the description of the proposed action. They must be implemented as binding conditions for the exemption in section 7(o)(2) to apply. The WWNF has the continuing duty to regulate the activities covered in this incidental take statement. If the WWNF fails to require the applicants to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse. Activities carried out in a manner consistent with these reasonable and prudent measures, except those otherwise identified, will not necessitate further site-specific consultation. Activities which do not comply with all relevant reasonable and prudent measures will require further consultation.

The following reasonable and prudent measures are necessary and appropriate to minimize incidental take of SR steelhead and SR spring/summer chinook resulting from implementation of the action.

The WWNF shall:

1. Avoid and minimize the likelihood of incidental take resulting from culvert replacement activities, riparian disturbance, and in-water work required to complete the proposed Projects addressed in this Opinion.

2. Avoid and minimize the amount and extent of incidental take from construction activities in or near watercourses by ensuring that activities are carried out in a manner that will minimize the potential for sediment to enter the stream.

3. Monitor the effects of the proposed action to determine the actual project effects on listed fish (50 CFR 402.14 (I)(3)). Monitoring should detect adverse effects of the proposed action, assess the actual levels of incidental take in comparison with anticipated incidental take documented in the Opinion, and detect circumstances where the level of incidental take is exceeded.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the action must be implemented in compliance with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (general construction, riparian disturbance, and in-water work), the WWNF shall ensure that:

    a. Minimum area. Confine construction impacts to the minimum area necessary to complete the Projects.
    b. Timing of in-water work. Work below the bankfull elevation[2] will be completed using the most recent preferred in-water work period, or during dry channnel conditions, as appropriate for the project area, unless otherwise approved in writing by NOAA Fisheries.
    c. Cessation of work. Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
    d. Preconstruction activity. Complete the following actions before significant[3] alteration of the project area.
        i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
        ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

[2] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

[3] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[4]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

e. Temporary access roads. All temporary access roads will be constructed as follows.

i. Existing ways. Use existing roadways, travel paths whenever possible,.

ii. Minimizing soil disturbance and compaction. Minimize soil disturbance and compaction whenever a new temporary road is necessary within 150 feet[5] of a stream, waterbody or wetland.

iii. Obliteration. When the project is complete, obliterate all temporary access roads that will not be in footprint of a new bridge or other permanent structure, stabilize the soil, and re-vegetate the site. Abandon and restore temporary roads immediately after completion of project work.

f. Heavy Equipment. Restrict use of heavy equipment as follows:

i. Vehicle and material staging. Store construction materials, fuel, and vehicles as follows:

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 feet or more from any stream, waterbody or wetland, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within 150 feet of any stream, waterbody or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.

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[4] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

[5] Distances from a stream or waterbody are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. 'Channel migration zone' means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years (e.g., alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams).

(5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 feet of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

g. Site preparation. Conserve native materials for site restoration.
   i. If possible, leave native materials where they are found.
   ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.
   iii. Stockpile any large wood[6], native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

h. Earthwork. Complete earthwork (excavation, dredging, filling and compacting) as quickly as possible.
   i. Site stabilization. Stabilize all disturbed areas following any break in work unless construction will resume within four days.
   ii. Source of materials. Obtain boulders, rock, woody materials and other natural construction materials used for the project outside the riparian area.

2. To implement reasonable and prudent measure #2 (pollution and erosion control), the WWNF shall ensure that:

   a. Pollution and Erosion Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by NOAA Fisheries.
      i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
         (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.
         (2) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

[6] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

(3) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

(4) Practices to prevent construction debris from dropping into any stream or waterbody, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[7]

(1) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

b. Control Erosion Associated with Vegetation Management Activities. During the rainy season, after completion of RHCA burning activities, the WWNF will conduct regular visits to the action area to assure there has been no mass wasting as a result of vegetation management activities.

3. To implement reasonable and prudent measure #3 (monitoring), the WWNF shall:

a. Reporting. Yearly, for the life of the project and one year after project completion, the WWNF will submit a monitoring report to NOAA Fisheries describing the success in meeting the terms and conditions contained in this Opinion. The monitoring report will include the following information.

i. Project identification

(1) Project name.

(2) Type of activity.

(3) Project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.

(4) WWNF contact person.

(5) Starting and ending dates for work completed.

[7] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 100 feet below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

ii. Photo documentation. Photos of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[8]
   (1) Include general views and close-ups showing details of the project and project area, including pre and post construction.
   (2) Label each photo with date, time, project name, and a comment about the subject.

iii. Other data. Additional project-specific data, as appropriate for individual projects.
   (1) Work cessation. Dates work ceased due to high flows, if any.
   (2) Fish screen. Evidence of compliance with NOAA Fisheries' fish screen criteria.
   (3) Pollution control. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.
   (4) Site preparation.
      (a) Total cleared area, defined as the total surface area from which vegetation has been altered or removed.
      (b) Total new compacted area as defined in the BA.

   (5) Site restoration. Photo or other documentation that site restoration performance standards were met.
   (6) Long-term habitat loss. The same elements apply as for monitoring site restoration.
   (7) Pre- and post-project water quality. Provide yearly water quality monitoring results, from existing monitoring sites, for the sub-watersheds within the project area as described in the BA. Monitoring data should include two years pre-project implementation, during project completion, and two years post project completion.

b. Effectiveness monitoring. Gather any other data or analyses the WWNF deems necessary or helpful to complete an assessment of habitat trends in stream and riparian conditions as a result of this project. The WWNF may use existing monitoring efforts for this purpose if those efforts can provide information specific to the objective of identifying habitat trends.

c. Field Review. Coordinate in cooperation with the WWNF/Baker BLM Level 1 Team to review the short-term, long-term, and watershed level effects of the projects. The visits should occur mid-project and during the wet season, when potential for project related sediment and turbidity will be the greatest.

d. Lethal take. If a sick, injured, or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA

[8] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

Fisheries Law Enforcement at (360)418-4246. The finder must take care in handling sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

e. Report submission. Submit a copy of the report to the Oregon Office of NOAA Fisheries.

Oregon State Director
Habitat Conservation Division
National Marine Fisheries Service
Attn: 2003/00978
525 NE Oregon Street
Portland, OR 97232

3. MAGNUSON-STEVENS ACT

3.1 Statutory Requirements

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a Federal fisheries management plan.

Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (section 305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that may adversely affect EFH (section 305(b)(4)(A));

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (section 305(b)(4)(B)).

The EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties

that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10). Adverse effect means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

The EFH consultation with NOAA Fisheries is required for any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action may adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH.

3.2 Identification of EFH

Pursuant to the MSA, the Pacific Fishery Management Council (PFMC) has designated EFH for three species of Federally-managed Pacific salmon: Chinook (*Oncorhynchus tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based, in part, on this information.

3.3 Proposed Actions

The proposed action and action area are detailed above in sections 1.2 and 1.3 of this document. The action area includes habitats that have been designated as EFH for various life-history stages of chinook salmon.

3.4 Effects of Proposed Action on EFH

The effects on chinook salmon are the same as those for SR steelhead and are described in detail in section 2.1.5 of this document, the proposed action may result in short- and long-term adverse effects on a variety of habitat parameters. These adverse effects are:

1. Riparian disturbance from temporary road construction and construction activities performed from the bank.

2. Increased sedimentation from instream construction activities.

3. Increased sedimentation from vegetation manipulation (i.e. burning, thinning, and harvest).

3.5 Conclusion

NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for chinook salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the WWNF, and believes that these measures are sufficient to minimize, to the maximum extent practicable, the following EFH effects: (1) Riparian disturbance; (2) increased sedimentation; and (3) improved habitat access. Although, these conservation measures are not sufficient to fully address the remaining adverse effects to EFH, specific Terms and Conditions outlined in section 2.2.2 and 2.2.3, respectively, are generally applicable to designated EFH for chinook salmon, and do address these adverse effects. Consequently, NOAA Fisheries recommends that the following terms and conditions be implemented as EFH conservation measures.

1. Term and Condition 1. (a., f., and h,..) will minimize riparian disturbance from project implementation.

2. Term and Condition 1. (a., c., f., g., h,.) as well as, 2. (a., and b.) will minimize sedimentation and pollution in the Meadow Creek watershed as a result of the project implementation.

3.7 Statutory Response Requirement

Pursuant to the MSA (section 305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The WWNF must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(l)).

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